THE DETERMINANTS OF PUBLIC DEBT IN PAKISTAN: AN ARDL APPROACH

By

Muhammad Imran

THESIS

Submitted to
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in partial fulfillment of the requirements
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ABSTRACT

Public debt and its sustainability have emerged as one of the core areas of concern in previous three decades. Pakistan, being a developing country has always remained confronted with the issue of debt overhang owing to its macroeconomic and political factors. This study, by using Pakistan as a case study and empirical method of ARDL cointegration, tries to enquire about the determinants of public debt by using data for the period 1970 to 2012. The study finds that inflation and economic growth have a significant restraining effect on public debt while openness has no significant impact on public debt. Political regime wise, the instant study throws out two contrasting details whereby inflation is the major determinant of public debt in democratic regimes while growth appears as a significant factor in autocratic periods. According to the findings, it may be inferred that inflation lowers down the higher impact of interest rates for the debt. In essence however, it implies that resort to inflationary methods without accompanying growth may arrest the debt surge but leaves the economy prone to other repercussions. The impact of economic growth as a determining factor suggests that stimulus in economic growth creates the fiscal space and improves the debt dynamics thus limiting the need of public debt as a source of finance.

Key Words: ARDL, Public Debt, Inflation, GDP per Capita, Openness, ECM, Autocratic, Democratic.

Dedicated to
My beloved parents

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LIST OF ACRONYMS

ADF	Augmented Dickey Fuller
AIC	Akaike Information Criterion
ARDL	Auto Regressive Distributed Lag
CPI	Consumer Price Index
DPCO	Debt Policy Coordination Office
FDI	Foreign Direct Investment
FRDL	Fiscal Responsibility & Debt Limitation
GCF	Gross Capital Formation
GDP	Gross Development Product
GFC	Global Financial Crisis
GOP	Government of Pakistan
HIPC	Highly Indebted Poor Countries
IMF	International Monetary Fund
MAC	Market Access Countries
MOF	Ministry of Finance
ODA	Official Development Assistance
OECD	Organization of Economic Cooperation and Development
OLS	Ordinary Least Squares
PIGS	Portugal Ireland Greece and Spain
SBC	Schwarz-Bayesian Criterion

CHAPTER I INTRODUCTION

1.1 Background of the study

Being within the ambit of fiscal policy, public debt has an important bearing upon the economic health of both developing and developed countries. There are instances when public debt accompanied by sound economic policies has supplemented countries' growth efforts. It has made it possible for the governments to invest in very essential infrastructure and social sectors projects when those governments' capacity for taxation was limited or the alternative recourse was printing money to finance their expenditures (Gill and Pinto, 2005). Therefore, in this parlance creation of debt is very much a normal economic activity. However, public debt may become a source of severe economic hardship when it crosses the debt carrying capacity of the country.

In this regards, past three decades drew attention towards sound debt management as huge public debt has proved to be a source of economic and financial crisis in a number of developing countries like Latin America in the 1980s, East Asia in the late 1990s and Russia in early 2000s (World Bank, 2007). In recent years, PIGS (Portugal, Greece, Ireland and Spain) countries have been found in a spiral of debilitating debt crisis. The Global Financial Crisis (GFC) however, has put forward this proposition more emphatically when unfavorable debt accumulation became a matter of concern at a large scale, even in advanced economies. Consequently, financial crisis prompted a major policy focus upon devising mechanisms for stabilizing the high public debt/GDP ratios in the post crisis advanced economies (Reinhart, Reinhart and Rogoff, 2012).

This phenomenon therefore, clearly showed that excessive debt burdens as a whole have negative repercussions, irrespective of the stage of development of the countries. Nevertheless,

the situation remains more ominous when contextualized for developing countries whose huge debt servicing costs reduce their budgetary resources and hence puts severe pressures on their macroeconomic fundamentals. Eventually, scope for the economic growth and social uplift of their masses becomes acutely limited. It was one of the reason which moved the IFIs to introduce an arrangement under the caption of Highly Indebted Poor Countries (HIPC) in order to scale down the world poorest countries' debt levels (Jalles, 2011).

Several macroeconomic factors, monetary and fiscal policies cause the public debt to rise, depending upon the nature and structure of the economy and the polity .In the same vein, the effectiveness of the economies in dealing with their debt depends upon the mixture of the policies they pursue (Reinhart & Sabrancia, 2015). Therefore, an examination of the relationship amongst economic policies, economic cycles and several economic and political institutions explains about the dynamics of debt accumulation of countries (Rodrick, 1999)

As a developing country, Pakistan is encountering the issue of "debt overhang" as with a debt to GDP ratio of around 63.7%, sovereign debt accumulation and its servicing reduce the fiscal space (www.finance.gov.pk). Table 1.1 shows that a significant portion of the revenue is consumed for the servicing of the debt as Pakistan's public debt as a whole reaches to around 480% of revenue to GDP ratio (www.finance.gov.pk).[1]

Table 1.1: Selected Public Debt Indicators (%)					
	2010	2011	2012	2013	2014
Revenue Balance / GDP*	(1.7)	(3.3) (a)	(4.5) (b)	(2.9) (c)	(0.7)
Primary Balance / GDP*	(1.6)	(2.5) (a)	(4.2) (b)	(3.6) (c)	(0.2)
Fiscal Balance / GDP	(6.2)	(6.5) (a)	(8.8) (b)	(8.2) (c)	(5.5)
Public Debt / GDP	60.6	58.9	63.3	63.9	63.8
Public Debt / Revenue	433.4	477.9	494.7	479.2	439.8
Debt Service / Revenue	40.4	38.0	39.9	40.5	40.1
Debt Service / GDP	5.6	4.7	5.1	5.4	5.8

[1] The insalubrious effects of the debt servicing may be gauged by the fact that in 2013-14, around 40.1% of the revenue went for debt servicing.

Note: *Adjusted for grants	***Source****: DPCO, Ministry of Finance (MOF)*
(a)includes arrears of electricity subsidies amounting to Rs.120 billion or 0.7 percent of GDP	
(b) includes "one off" payment of Rs.391 billion on account of debt consolidation or 2 percent of GDP	
(c) includes payment for the resolution of the circular debt amounting to Rs.322 billion or 1.4 percent of GDP	

This study has been undertaken to analyze the determinants of public debt in Pakistan. Specifically, the research would see how inflationary trends, openness of the economy and economic growth impact the public debt profile of Pakistan. Besides, public debt being a political issue, an important objective is to determine the influence of nature of different regimes upon the public debt of the country, whether autocratic or democratic.

1.2 Statement of the Problem and Purpose of the Study

Debt servicing by taking a big mass of the country's revenue adversely affects the fiscal maneuverability of Pakistan and leaves the country prone to external and internal macroeconomic shocks. The contemporary global developments in the arena of sovereign debt (PIGS countries as a whole and Greece in particular) also suggest that debt burden invariably makes the country susceptible to different endogenous and exogenous economic shocks and often lands the countries into extremely unenviable position. Therefore, in order to put the country on the way to a sustainable growth, it is crucial that vulnerability to debt related shocks is minimized.

In this respect, some efforts for reducing the debt were initiated in Pakistan in the past decade and a Fiscal Responsibility and Debt Limitation Act 2005 was promulgated which besides others requires that governments adhere to a limit when resorting to debt. Concurrently, a shift has become visible in the composition of public debt of Pakistan as more reliance is being placed on the internal borrowing than external borrowing. However, rise in domestic debt vis-a-vis external debt is a trend in developing countries, going on for the last two decades. During the period 1990 to 2004, the share of domestic debt increased from 38 to 58 % in case of emerging market economies (Hanson, 2007). Similarly, in the case of Low Income Countries (LICs), a

trend of reliance on domestic sources is visible (Bua, Pradelli and Presbitero (2014). However, although vulnerability to external pressures is considerably reduced due to inclination towards domestic financial resources, still Pakistan remains in a situation where bailout by IMF remains recourse for the economy, as may be seen in the recent financial developments[2]. There is a general consensus in the country that economic policy making is heavily influenced by the IFIs. Besides, negative fallout of external debt on the economy, an over reliance on domestic debt also becomes a huge cost as it leads to higher interest rates, inflationary pressures and crowding out of private investment.

Public debt therefore, remains a haunting issue for Pakistan economy. The Debt Policy Statement of the Government of Pakistan (GOP) also states that a comprehensive debt management is required on the part of government not only to keep the current levels of debt under control but also to fulfill the future repayment obligations (www.finance.gov.pk). In this regard, the macroeconomic policies are required to be in line with the fiscal policies. Therefore, it becomes of paramount importance to know how the issue of public debt may be tackled in the short run and long run by examining the impact of major macroeconomic variables and nature of political regime on the public debt accumulation in Pakistan.

1.3 Significance of the Study

Intermittent debt crises in several countries and regions in the past three decades have been the catalyst for a resounding scholarly interest in public debt resulting into extensive investigation and appearance of several cross country and country studies. In Pakistan's case, a study focusing on the determinants of public debt has been conducted by Burney (1988). Burney investigated the determinants of Pakistan's external indebtedness by taking into consideration various debt service and debt burden indicators like savings rate, marginal capital output ratio

[2] In March 2015 Pakistan finalized its negotiations with the IMF for the 6th review of its Extended Arrangement under the Extended Fund Facility (EFF) for a USD 360 Million SDR.

and GDP growth rate. He also analyzed the debt servicing capacity for Pakistan. The other studies focused upon Pakistan's debt management (World Bank, 2010), debt structure profile and nature (Mehmood & Rauf A., 2008; Hassan, 1999), debt inflation nexus (Jalil, Tariq, Bibi, 2014) and public debt and growth relationship (Akram, 2011).

However, this study will take a holistic approach and by applying the empirical method of bounds testing, will examine the determinants of public debt of Pakistan with particular interest on the impact of inflation, openness of the economy and economic growth by taking GDP per capita into account besides other macroeconomic variables. This research therefore, will contribute in four ways. Firstly the study will take inflation as one of the important determinant of public debt in Pakistan as previously little work has been done on inflation debt relationship in Pakistan. Secondly, growth will be taken as explanatory variable as previously most of the studies have taken growth as independent variable when exploring the debt growth nexus. Thirdly, the study will analyze whether openness of the economy has any disciplinary impact on the debt of Pakistan? Fourthly, and more importantly the study will use the empirical method of bounds testing by applying ARDL approach which never has been done before.

1.4 Hypotheses to be tested

The study will test the following hypotheses:

***H*ypothesis 1**: Inflation is the major factor which reduces the public debt in Pakistan.

***H*ypothesis 2** : Higher economic growth reduces the public debt in Pakistan.

***H*ypothesis 3**: Openness of the economy has a disciplinary impact on the public debt of Pakistan.

CHAPTER II LITERATURE REVIEW

Public debt has been able to arouse much of debate and interest in recent past so literature is in abundance. For this study, the literature review is split into theoretical background and empirical parts. Besides, the section gives an overview of public debt profile of Pakistan, a snapshot of the views expressed by other scholars about the determinants of public debt in developing countries and about the factors impacting public debt in Pakistan.

2.1 Public Debt Profile of Pakistan

Pakistan has been accumulating debt year after year and except for few years, growth in public debt has remained not only positive but very high (Mahmood and Rauf, 2008). The debt stock started really increasing during 1980s and at the end of 1990s, debt to GDP ratio crossed 100 %. The debt stock however, was pulled back from the start of 2000s and then again in the last seven years, debt portfolio of Pakistan climbed up. In the past decade, debt composition considerably tilted towards domestic public debt due to unremitting large fiscal deficits while recourse to external financing became very hard (MOF, 2015).

Table 2.1: Trend in Public Debt: Year Wise Public Debt Position *(Pak Rupees in Billion)*

Year	Public Debt	Domestic Debt	External Debt	Year	Public Debt	Domestic Debt	External Debt	Year	Public Debt	Domestic Debt	External Debt
1971	30	14	16	1986	390	203	187	2001	3,684	1,799	1,885
1972	55	17	38	1987	458	248	209	2002	3,636	1,775	1,862
1973	60	20	40	1988	523	290	233	2003	3,694	1,895	1,800
1974	62	19	44	1989	634	333	300	2004	3,866	2,028	1,839
1975	70	23	48	1990	711	381	330	2005	4,211	2,178	2,034
1976	85	28	57	1991	825	448	377	2006	4,359	2,322	2,038
1977	97	34	63	1992	969	532	437	2007	4,802	2,601	2,201
1978	112	41	71	1993	1,135	617	519	2008	6,126	3,275	2,852
1979	130	52	77	1994	1,340	716	624	2009	7,731	3,860	3,871
1980	146	60	86	1995	1,497	809	688	2010	9,006	4,654	4,352
1981	145	58	87	1996	1,704	920	784	2011	10,767	6,017	4,750
1982	189	81	107	1997	1,995	1,056	939	2012	12,695	7,638	5,057
1983	227	104	123	1998	2,392	1,199	1,193	2013	14,293	9,522	4,771
1984	257	125	132	1999	2,946	1,389	1,557	2014	15,996	10,920	5,076
1985	309	153	156	2000	3,172	1,645	1,527				

***Note*: Source :(MOF)**

According to Burney (1988), current level of debt reflects the decisions taken in past regarding terms at which funds have been borrowed and the uses to which those funds have been put to. Table 2.2 presents the recent phenomenon in debt composition of public debt for Pakistan. It may be seen that domestic debt which used to be 29.2 % in 2009 has rose to 43.0 % of the GDP in 2014. The change illustrates that in recent years although overall debt ratio has improved, domestic debt has increased.

Table 2.2:	Public Debt Profile (Selected Ratios Recent Years)						
	2009	2010	2011	2012	2013	2014	2015(E)
	(Rs. in billion)						
Domestic Debt	3,860.4	4,654.3	6,016.7	7,638.1	9,521.9	10,920.0	11,105.6
External Debt	3,871.0	4,351.9	4,750.2	5,057.2	4,771.0	5,076.5	5,129.6
Total Public Debt(a)	**7,731.4**	**9,006.2**	**10,766.9**	**12,695.3**	**14,292.9**	**15,996.5 1**	**6,235.2**
	(In percent of GDP)						
Domestic Debt	29.2	31.3	32.9	38.1	42.3	43.0	38.2
External Debt	29.3	29.3	26.0	25.2	21.2	20.0	17.6
Total Public Debt	**58.6**	**60.6**	**58.9**	**63.3**	**63.6**	**63.0**	**55.8**
	(In percent of revenues)						
Domestic Debt	208.6	224.0	267.1	297.6	319.3	300.2	---
External Debt	209.1	209.4	210.9	197.0	160.0	139.6	---
Total Public Debt	**417.7**	**433.4**	**477.9**	**494.7**	**479.2**	**439.8**	**---**
	(In percent of total debt)						
Domestic Debt	49.9	51.7	55.9	60.2	66.6	68.3	68.4
External Debt	50.1	48.3	44.1	39.8	33.4	31.7	31.6
Memo:							
Foreign Currency Debt (US$ in billion)	47.6	50.9	55.3	53.5	47.9	51.4	50.0
Exchange Rate (Rs./US$, End of Period)	81.4	85.5	86.0	94.5	99.7	98.8	102.6
GDP(b) (Rs. in billion)	13,200	14,867	18,276	20,047	22,489	25,402	29,078
Total Revenue (Rs. in billion)	1,851	2,078	2,253	2,567	2,982	3,637	**---**
Note: P:Provisional *end-September, 2014							**Source: MOF**
(a)The public debt amounts are shown in accordance with the revised public debt definition i.e. the portion of total debt which has a direct charge on government revenues as well as the debt obtained from the IMF is defined as public debt							
(b)The base of Pakistan's GDP has been changed from 1999-00 to 2005-06							

2.2 Debt Sustainability

Important issue in the macroeconomic paradigm is debt sustainability of the countries. According to International Monetary Fund, "an entity's position is sustainable if it satisfies the

present value budget constraint without a major correction in balance of income and expenditure given the cost of financing it faces in the market". Debt sustainability therefore, implies adherence to a formal budget constraint. Neck and Sturm (2008) regard debt sustainability as defining short, medium or long-term time horizons and considering that how debt and deficits can be measured and whether liabilities of social security systems and other items are included or excluded.

In this context, debt dynamics are influenced by the nature and duration of debt of the countries. In order to move smoothly and sail in the economic arena, debt sustainability impinges upon the debt selection and its timely repayment. Postole (2013) argues that minimizing costs and avoiding unfavorable risks to economic growth is very crucial for sustainability of debt for the countries with high level of debt and interest payments.

In this regard, IMF carries out Debt Sustainability Analysis (DSA) for low income and Market Access Countries (MACs), separately. For MACs, the framework for the DSA spells out following procedure:

I. Assess the current debt situation, its maturity structure, whether it has fixed or floating rates, whether it is indexed, and by whom it is held;
II. Identify vulnerabilities in the debt structure or the policy framework far enough in advance so that policy corrections can be introduced before payment difficulties arise;
III. In cases where such difficulties have emerged, or are about to emerge, examine the impact of alternative debt-stabilizing policy paths.

2.2.1 Debt Sustainability: The case of Pakistan

Pakistan public debt remained sustainable up to early 1980s when debt stock started climbing up but public debt really started threatening the Pakistan economy in 1999s and

situation became serious at the start of 2000s when public debt to GDP ratio became more than 100 %. However, in 2005 Pakistan enacted Fiscal Responsibility and Debt Limitation (FRDL) Act to give a direction and discipline to public debt management in Pakistan. The FRDL, inter alia stipulated that within ten years of its enactment, debt to GDP ratio to be reduced to 60% while revenue deficit to be reduced to nil. Therefore, it may be inferred that FRDL is the first concrete and coherent move towards a sustainable debt profile of Pakistan. But, Table 2.1 and 2.2 show that public debt is still a major component of the public finance despite efforts made to stabilize the debt level.

2.3 Theoretical Literature on the Public Debt

The basic premise for raising the public debt is that governments require public debt so that the shortfall in revenue generation may be offset by obtaining loans from domestic and external resources in order to finance the development needs of the country. The classical economists like Smith (1776) and Mill (1845) did not like the idea of public debt but later on, David Ricardo (1820) posited that consumers have an eye on the future needs and therefore, taxation and debt are equal in the long run. Ricardo's claim has been called as Ricardian Equivalence and it has remained effective in the face of aversion of traditional economists to public debt. During the Great Depression, Keynes (1933) made a case for public debt. According to Keynesian theory, if the private sector perceives government debt as net wealth, the fiscal deficit and subsequent government expenditure will further spur the private consumption expenditures, transaction demand, interest rates, and prices (Bal and Rath 2014).

Neo classical economists led by Barro gave a more intelligible shape to Ricardian Equivalence (1820). By improving upon the postulates of Ricardo, Barro (1979) gave the tax smoothing model and claimed that debt is countercyclical, is positively affected by temporary increases in government spending and is negatively affected by temporary increases in income.

Therefore, according to neoclassical theory of debt, fiscal deficits arise when government spending is temporarily high or when productivity slows down temporarily (Woo, 2003).

However, contrary to the neo classical theory of economic growth, the endogenous growth theory, also called “New Growth Theory" (Romer, 1986; 1990, Lucas, 1988; Barro, 1990 and Rebelo, 1991) did not receive the public debt with enthusiasm. Instead the endogenous growth theory has shown negative growth result of public debt in the discrete-time model of overlapping generations (Josten, 2002).

2.4 Empirical Literature

Public debt is one of the principal dimensions of an economy and hence has been put to empirical inquiry by numerous scholars to determine its relationship with other macroeconomic, institutional and political aspects. For this study, the primary focus is on inflation, economic growth and openness of the economy.

2.4.1 Public Debt and its Determinants

According to World Bank (2005), an examination of 31 country cases including Pakistan has demonstrated primary fiscal deficits, real GDP growth, real interest rates, the capital gain/loss on foreign currency denominated debt as result of exchange rate changes and fiscal costs associated with contingent liabilities such as bank bailouts as the factors determining the debt-to-GDP ratios. Hall and Sargent (2010) in a study conducted on US debt show that more than three quarters of US debt reduction, during the period 1946-74 occurred due to higher growth while a less than quarter occurred due to inflation.

Cherif and Hasanov (2012) in a study using macroeconomic indicators suggest that fiscal consolidation, high growth, large inflation, or low interest rates are the determinants of a debt-reduction strategy.

As discussed in chapter 1, a study primarily focusing upon the determinants of external debt of Pakistan was conducted by Burney (1988). His study however, focused on the determinants of Pakistan external indebtedness and examined six (6) debt indicators including Debt to GNP ratio, amortization as a per cent of disbursement, net resource transfer as per cent of GDP, debt servicing to export receipt ratio, interest payment to export receipt ratio and foreign exchange reserves to export receipt ratio. He used various explanatory variables like average interest rate, average maturity period, terms of trade, incremental capital output ratio and remittances to export ratios for the regression analysis. Moreover, he studied the debt servicing capacity of Pakistan also. Burney concluded that terms of borrowings and GDP growth rate do not have any impact on debt service ratios whereas efficiency of the economy measured by incremental output ratios and external shocks have been the more dominant

determinants of Pakistan external debt. He further concluded that long term debt servicing capacity of Pakistan can be increased if savings rate is increased.

The study conducted by Burney however, focused more upon the external debt and not the whole debt paradigm of Pakistan. Moreover, his study used the data[3] for a limited period and findings were based upon simple OLS method of regression. Public debt being a fiscal phenomenon has to do a lot with the political dispensation also. However, as the interest for a research into that aspect was not very common, Burney's study also lacks this aspect.

Keeping his study in perspective, this study goes a step further and strives to compensate for the time period lag and debt composition by using a different methodology of ARDL instead of OLS with a different set of variables as the focus is the public debt of Pakistan and not the external debt only. For instance, this study uses GDP/capita instead of GDP growth to measure the impact of growth, gross capital formation for investment instead of taking capital output ratio and openness instead of terms of trade.

[3] Burney took the data from 1973-74 to 1986-87.

2.4.1.1 Public Debt and Openness

This study raised a question whether any direct linear relationship exists between public debt and openness? Khattry (2003), using data of 80 developing and developed countries has concluded that trade liberalization results in declining revenues and higher interest expenditures. Francisco and Quadrini (2014) analyzed the impact of financial openness and concluded that due to international interconnectedness of financial markets, governments choose higher levels of public debt. Rajan and Ouyang (2013) have studied the nexus between external debt and export competitiveness and found that once external debt exceeds a certain threshold, it is negatively associated with export growth. Auboin (2004) explored the trade, debt and finance nexus and contended that liberalizing trade restrictions can have a positive impact on external debt and debt servicing because it gives an impetus to domestic growth, productivity and exports.

2.4.1.2 Public Debt and Economic Growth

The relationship between public debt and economic growth has remained a subject of intense debate. Past decades saw appearance of a host of empirical literature, analyzing the effects of growth on debt and vice versa. In a much popular study, Reinhart and Rogoff (2010) investigated the relationship of economic growth and debt and concluded that there is a weak relationship between government debt and real GDP growth if debt to GDP ratio is below 90 percent of GDP. According to Josten (2002), the endogenous growth model showed that public debt policy cannot be used to Pareto-improve welfare. Easterly (2002) too contends that economic growth is adversely affected by the accumulation of external debt.

Growth and debt studies usually have received a priori negative relationship status in the most empirical studies. Panizza & Presbitero (2014) however, studied the public debt and growth

relationship in OECD countries and concluded that when endogeneity is addressed, there is no causal relationship between public debt and economic growth. In the context of Pakistan, Qureshi and Ali (2010) by taking data from 1981 to 2008, have shown that public debt has adversely affected the economic growth of the country. Akram (2010) has also confirmed that public external debt has a negative and significant relationship with per capita GDP and investment, both in the short run and in the long run. His study further confirms the existence of "Debt Overhang effects".

2.4.1.3 Foreign Aid and Public Debt

The question of foreign aid and debt has attracted interest of a number of development economists in the past two decades. According to Bjornskov and Schroder (2013), presence of foreign aid reduces the incentive which adversely impacts the speed for debt repayment and discipline of debt servicing.

2.4.1.4 Inflation and Public Debt

Public debt and inflation are closely related to each other yet magnitude of impact may differ in different countries. Traditionally, governments may opt for a modest inflation to reduce the public domestic debt. In a study Kristine, Lycia and Ugo (2011) explore the composition of public debt in developing and emerging market countries and find a strong correlation between inflationary history and domestic debt share. Aizenman and Marion (2009) investigate the case of USA and conclude that after World War II, resort to inflation reduced the debt from 108 % to 40% of GDP. However, they also suggest that inflation can increase the debt i.e. foreign debt and short term maturities. Reinhart and Sbrancia (2011) suggest that financial repression and higher inflation reduce the debt.

Hasan, Chaudhry and Ahmad (1999) analyze the debt problem of Pakistan and find that in 1990s inflation wiped out a significant portion of nominal debt burden by offsetting the impact of increase in the interest rates.

2.4.5 Public Debt and Exchange Rate

Foreign component of public debt has a direct relationship with the public debt because when a country's currency gets appreciated, the foreign borrower is required to be paid extra sum. In a study, Tille (2003) explored the reasons behind the US public debt and concluded that from 1999 to 2001, one third of sudden increase in the level of debt was due to appreciation of dollar during the period.

2.4.6 Public Debt and Political Regime

In past decades, impact of nature of the political regime on public debt has been studied by different scholars. Alesina and Perotti (2005) have investigated the issue of budget deficits and public debt in the OECD countries by particularly taking into account the political factors and concluded that coalition governments tend to accumulate large public debts. However, Khemani and Wane (2008) rejected the view that coalition governments are more profligate than the single party governments and present an alternative model whereby a coalition government spends less on the public goods for re-election than a single party government. The impact of politics on public debt therefore, is a crucial factor and defines up to a large extent the dynamics of public debt accumulation.

However, other socio-political and institutional factors also matter. Woo (2003) examines a large set of economic, sociopolitical, and institutional variables in a panel of 57 developed and developing countries and concludes that financial depth, income inequality,

assassinations, cabinet size, and centralization of authority in budgetary decisions are important determinants of public deficits.

CHAPTER III METHODOLOGY AND DATA

3.1 Model Specification

The purpose of this study is to investigate the fundamental determinants of public debt in Pakistan. Therefore, by taking into consideration the determinants provided by the literature, the debt to GDP ratio (DEBT) is regressed on following variables: Growth of GDP per capita (GDPC); openness of economy measured as aggregates of exports and imports relative to GDP (OPEN); inflation taken as change in consumer price index (INF); investment measured as gross capital formation as a percent of GDP (INV) along with other explanatory variables which include foreign direct investment (FDI), foreign aid (ODA) and exchange rate (EXCH). However, the main variables of interest are inflation (INF), economic growth (GDPC) and openness of the economy (OPEN). Besides macroeconomic variables, a sub-sample analysis has also been conducted for capturing the nature of political regime. [4]

Following equation gives the OLS model specification where debt to GDP ratio is determined by the aforesaid variables:

$$DEBT_t = \beta_0 + \beta_1 INF_t + \beta_2 GDPC_t + \beta_3 OPEN_t + \beta_4 FDI_t + \beta_5 ODA_t + \beta_6 INV_t + \beta_7 EXCH_t + \varepsilon_t \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (3.1)$$

However, the study of time series data is constrained by many stumbling blocks such as non-stationarity which lead to extremely misleading results. This study used the empirical method of bounds testing for co-integration within the framework of Pesaran (2001) Autoregressive Distributed Lag Model (ARDL) to determine the long-run relationship among variables. The ARDL model is widely acclaimed and hence has been taken due to its various

[4] Whether the given regime is autocratic or democratic. In the study, autocratic regime is the one with military ruler at the helm of affairs while democratic regime means a political set up where public representatives chosen through election were in power.

advantages in time series data analysis such as that ARDL model gives good results whether the data is I(0) or I(1) (Pesaran and Shin, 1995) and also when sample size/data is small, this model provides consistent estimates. Therefore, by using ARDL framework, equation 3.1 can be written as follows:-

$$\mathbf{\Delta DEBT}_t = \boldsymbol{\beta_0} + \sum_{\mathbf{i=1}}^{\mathbf{p}} \boldsymbol{\omega_i}\, \mathbf{\Delta\, DEBT}_{t-i} + \sum_{\mathbf{i=0}}^{\mathbf{p}} \boldsymbol{\psi_i}\, \mathbf{\Delta\, INF}_{t-i} + \sum_{\mathbf{i=0}}^{\mathbf{p}} \boldsymbol{\phi_i}\, \mathbf{\Delta}\ \boldsymbol{GDPC}_{t-i} +$$
$$\sum_{\mathbf{i=0}}^{\mathbf{p}} \boldsymbol{\delta_i}\, \mathbf{\Delta\, OPEN}_{t-i} + \sum_{\mathbf{i=0}}^{\mathbf{p}} \boldsymbol{\varphi_i}\, \mathbf{\Delta\, FDI}_{t-i} + \sum_{\mathbf{i=0}}^{\mathbf{p}} \boldsymbol{\Pi_i}\, \mathbf{\Delta\, INV}_{t-i} + \sum_{\mathbf{i=0}}^{\mathbf{p}} \boldsymbol{\partial_i}\, \mathbf{\Delta\, ODA}_{t-i} + \sum_{\mathbf{i=0}}^{\mathbf{p}} \boldsymbol{\Omega_i}\, \mathbf{\Delta\, EXCH}_{t-i} +$$
$$\boldsymbol{\theta_1 DEBT}_{t-1} + \boldsymbol{\theta_2 INF}_{t-1} + \boldsymbol{\theta_3 GDPC}_{t-1} + \boldsymbol{\theta_4 OPEN}_{t-1} + \boldsymbol{\theta_5 FDI}_{t-1} + \boldsymbol{\theta_6 INV}_{t-1} + \boldsymbol{\theta_7 ODA}_{t-1} +$$
$$\boldsymbol{\theta_8 EXCH}_{t-1} + \boldsymbol{\mu_t} \qquad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \textbf{(3.2)}$$

Where $\beta_\circ$ is the element showing the drift while the terms $\omega, \psi, \phi, \delta, \varphi, \Pi, \partial, \Omega$ show the coefficients to be estimated. $\boldsymbol{\mu_t}$ is assumed to be the white noise. The number of lags are shown by "i" whereas "p" represents the optimal lag. Following the Pesaran model (1997), the maximum lags for the annual data is restricted to two years. The part of the equation starting with "θ" characterizes the long term relationship. Therefore, in order to know the long term relationship, the null and alternative hypotheses are specified as follows:

$$\boldsymbol{H_0};\quad \theta_1 = \theta_2 = \cdots\cdots = \theta_8 = 0$$
$$\boldsymbol{H_1};\quad \theta_1 \neq \theta_2 \neq \cdots\cdots = \theta_8 \neq 0$$

The following model is used as an unrestricted error correction model:

$$\mathbf{\Delta DEBT}_t = \boldsymbol{\alpha_0} + \sum_{\mathbf{i=1}}^{\mathbf{p}} \boldsymbol{\omega_i}\, \mathbf{\Delta\, DEBT}_{t-i} + \sum_{\mathbf{i=0}}^{\mathbf{p}} \boldsymbol{\psi_i}\, \mathbf{\Delta\, INF}_{t-i} + \sum_{\mathbf{i=0}}^{\mathbf{p}} \boldsymbol{\phi_i}\, \mathbf{\Delta}\ \boldsymbol{GDPC}_{t-i} +$$
$$\sum_{\mathbf{i=0}}^{\mathbf{p}} \boldsymbol{\delta_i}\, \mathbf{\Delta\, OPEN}_{t-i} + \sum_{\mathbf{i=0}}^{\mathbf{p}} \boldsymbol{\varphi_i}\, \mathbf{\Delta\, FDI}_{t-i} + \sum_{\mathbf{i=0}}^{\mathbf{p}} \boldsymbol{\Pi_i}\, \mathbf{\Delta\, INV}_{t-i} + \sum_{\mathbf{i=0}}^{\mathbf{p}} \boldsymbol{\partial_i}\, \mathbf{\Delta\, ODA}_{t-i} + \sum_{\mathbf{i=0}}^{\mathbf{p}} \boldsymbol{\Omega_i}\, \mathbf{\Delta\, EXCH}_{t-i} +$$
$$\boldsymbol{\tau}\, \mathbf{ECM}_{t-1} + \boldsymbol{\vartheta_t} \qquad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \textbf{(3.3)}$$

3.2 Data

The study uses Pakistan as a case study to know the determinants of public debt. The data for debt to GDP ratio (DEBT) has been taken from the online database of Public Sector Debt Statistics of IMF and logged to fit our model. All the other variables, including openness (OPEN), inflation (INF), foreign aid(ODA), investment (INV), GDP per capita(GDPC), foreign direct investment (FDI) and exchange rate (EXCH) are taken from World Bank's World Development Indicators. These variables excluding inflation were logged for the analysis. Inflation however, has been divided by 100 to reduce the standard error. All of the data is for the period 1970 to 2012.

Trade volume, as denoted by OPEN, is the aggregate of yearly exports and imports. In the analysis, it is the main variable of interest along with inflation (INF) and growth (GDPC). Although, trade does not have a direct relationship with public debt, it is assumed to have an indirect relationship. Usually, developing countries are characterized by trade restrictions, both of tariffs and non-tariffs. Auboin, (2003) suggests that removal of trade restrictions i.e a more open economy may contribute to increased productivity, domestic growth and exports which may reduce the reliance on foreign debt. In this study, expected sign of openness is negative i.e. more the openness, less the public debt.

Changes in consumer price index (INF) is selected to measure the effect of inflation on debt. Higher inflation erodes the value of debt by offsetting the increase in interest rate. Growth measured by changes in GDP per capita (GDPC) is included in the regression to know the impact of economic growth on the public debt. When there is higher economic growth it increases the domestic revenue and therefore; resort to debt decreases, thus carries a negative sign.

The Gross Capital Formation (INV), a proxy for investment is a control variable and is expected to have a negative sign. Foreign Direct Investment denoted by FDI is also a control variable and measures the effects of foreign investment on public debt, particularly due to its

close relationship with external debt. For this study, it is assumed that it has a negative sign as FDI has a substitution effect with foreign debt and hence decreases the public debt. ODA has been proxied to measure the impact of changes in foreign aid on debt and carries a negative sign. Exchange rate (EXCH), as a control variable has been taken to measure the effects of exchange rate fluctuations on the public debt. The appreciation in exchange rate decreases the public debt while depreciation leads to an increase in the public debt. It has a negative sign.

3.3 Descriptive Statistics

Table 3 below shows the descriptive statistics of the variables used in regression. It may be seen from the standard deviation that exchange rate is the most volatile of all the variables while FDI, ODA and GDP per capita possess a stable trend.

Table 3.1:		Descriptive Statistics			
Variables	Observations	Mean	Standard Deviation	Minimum	Maximum
DEBT	43	65.30	10.96	47.90	91.70
INF	43	9.36	5.33	2.91	26.66
GDPC	43	2.14	2.27	-2.23	8.37
OPEN	43	33.02	3.89	19.93	38.91
FDI	43	0.76	0 .84	-0.06	3.67
INV	43	0.84	6.55	-9.19	18.53
ODA	43	2.67	1.45	0.86	7.48
EXCH	43	33.87	26.08	4.76	93.39
Note:	Author' s	Estimation			

According to Table 3.2 the correlation matrix shows that most of the variables, except openness have a negative sign meaning thereby that these factors have a declining effect on the public debt of Pakistan.

Table 3.2:			Pairwise Correlation Matrix					
	DEBT	**INF**	**GDPC**	**OPEN**	**FDI**	**INV**	**ODA**	**EXCH**
DEBT	1.00							
INF	-0.10	1.00						
GDPC	-0.32*	-0.08	1.00					

OPEN	0.23	0.27	0.01	1.00				
FDI	-0.14	0.08	0.02	0.30	1.00			
INV	-0.32*	-0.13	0.50*	0.01	0.05	1.00		
ODA	-0.16	0.27	0.06	-0.28	-0.52*	0.14	1.00	
EXCH	0.04	-0.01	-0.17	0.13	0.58*	-0.32*	-0.67*	1.00
Note:		Author's Estimation						

CHAPTER IV DATA ANALYSIS AND INTERPRETATION

In the light of data and methodology discussed in chapter 3, this section will present the empirical results and their interpretation.

4.1 Unit Roots Test

Stationarity of the data is the essential characteristic of the time series so as to make it eligible for the analysis, otherwise in the case of non-stationary data, “spurious regression” is the certain outcome. According to Gujarati (2004), “ a stochastic process is said to be stationary if its mean and variance are constant over time and the value of the covariance between the two time periods depends only on the distance or gap or lag between the two time periods and not the actual time at which the covariance is computed”. Therefore, when applying OLS method for regression, it is assumed that means, variances and auto-covariances are constant and/or time independent (Wooldridge 2009).

In ARDL method of testing of cointegration, non-stationarity of the data is no more an issue. However, still unit roots test for stationarity is recommended as ARDL model is rendered ineffective if series are integrated of order 1(2) or above. Therefore, unit roots tests have been conducted to know beforehand that model is appropriate for the ARDL regression or otherwise. For the purpose, Augmented Dickey- Fuller (ADF) test has been conducted for all the variables to examine that the order of integration is not higher than one. The results are presented in Table 4.1 which shows that variables are integrated to a series either 1(1) or 1(0) and consequently, ARDL model stands ready for deployment.

Table 4.1: ADF Unit Roots Test			
Variables	**ADF test for Unit Roots**		**Conclusion**
	At Level	At 1st Difference	
DEBT	-2.169	-4.476***	1(1)
INF	-3.458***	-	1(0)
GDPC	-2.890**	-	1(0)
OPEN	-3.349***	-	1(0)
FDI	-2.479	-3.698***	1(1)
ODA	-1.417	-5.216***	1(1)
EXCH	0.664	-4.033***	1(1)
INV	-2.839**	-	1(0)
Note: *, **, *** represent the significance at 10%, 5% & 1% respectively			

4.2 ARDL Cointegration Tests for Long Term Estimates

After establishing that all of the series are either I(0) or I(1), ARDL model is run for determining the long-run relationship among the variables of interest. The optimal lag selection has been made by using three different criterion namely Schwarz-Bayesian Criterion (SBC), Akaike Information Criterion (AIC) and Restricted Models by putting into regression the Equation 3.2.

Firstly, SBC criterion has been used for the analysis of long term relationship and the results are shown at Table 4.2. For the purpose seven different models have been used. The regression results clearly indicate that inflation (INF) and growth (GDPC) have a significant negative impact upon the public debt accumulation in Pakistan which is according to expectations of this study.

As regards inflation, a one percent increase in inflation reduces the public debt by about 3.5 percent on average. The results are in line with the analysis of Hassan et al (1999). Similarly, economic growth (GDPC) also reduces the public debt which endorse the findings of Qureshi and Ali (2010) and Akram (2010).It also reaffirms the conclusion of Sheriff and Hasnow (2012) that a positive shock of growth has significant effect on reducing the public debt as both higher growth and primary surpluses reduce the government debt.

Table 4.2: ARDL Long Run Model with Log Public Debt as Dependent variable by using SBC criteria							
Variables	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**
INF	-0. 0293** (0.0171)	-0.0283** (0.0117)	-0.0388** (0.0176)	-0.0372** (0.0170)	-0.0377** (0.0168)	-0.0382** (0.0183)	-0.0401** (0.0160)
GDPC		-0.0980*** (0.0338)	-0.1128** (0. 0471)	-0.1085** (0.0455)	-0.1013** (0.0467)	-0.1123** (0.0478)	-0.0733** (0.0346)
OPEN			-0.4323 (0.6920)	-0.3157 (0.6959)	-0.3378 (0.6764)	-0.4535 (0.7301)	0.1792** (0.5465)
FDI				-0.0324 (0. 0637)			
INV					-0.0054 (0.0091)		
ODA						-0.0045 (0.0414)	
EXCH							-0.0442 (0.0660)
Cons.	1.2483*** (0.4377)	1.5266*** (0.3723)	1.5399** (0.5805)	1.4962** (0.5934)	1.5172** (0.5875)	1.5608** (0.6184)	0.8169** (0.4247)
$\boldsymbol{ECM_{t-1}}$	- 0.2791** (0.1056)	-0.3275*** (0.0896)	-0.2444*** (0.0833)	-.2539*** (0.0863)	-0.2548*** (0.0860)	-0.2446*** (0.0845)	-0.2043*** (0.0612)
Adjusted R-Squared	0.2575	0.5234	0.5616	0.5520	0.5531	0.5489	0.7716
Log Likelihood	34.8302	45.0290	47.3186	47.4672	47.5180	47.3260	61.2787
No. of Observations	41	41	41	41	41	41	41
Root MSE	0.1074	0.0861	0.0825	0.0834	0.0833	0.0837	0.0596

Cumulatively, the instant results indicate that in case of Pakistan, inflation and economic growth are main determinants of public debt. The results are consistent at 5% level of significance.

Contrary to our expectations, openness (OPEN) is statistically insignificant in four out of five models; however carries the expected negative sign. But when INF, GDPC and OPEN are put into regression along with EXCH, it becomes significant and positive. This may be attributed to the fact that Pakistan is not a net exporter and hence openness of economy results in decrease in foreign exchange earnings which results in less debt servicing capacity for the external debt. Ultimately, a weakened debt servicing capacity induces to accumulate further debt. The other

control variables i.e. FDI, INV, ODA and EXCH also have the expected negative sign but are statistically insignificant.

4.3 Robustness Analysis

AIC and Restricted model criteria have been used to check the robustness of the results. Table 4.3 shows that results are robust with the AIC criterion. Inflation and GDP per capita are significant at five percent while openness does not show any significant relationship with public debt but again when put into regression along with Exchange Rate, it changes to positive.

Table 4.3: ARDL Long Run Model with Log Public Debt as Dependent variable by using *AIC* criteria

Variables	**Model 1**	**Model 2**	**Model 3**	**Model 4**
Inflation (CPI)	-0.0293** (0.0171)	-0.0374** (0.0153)	- 0.0319** (0.0127)	-0.0377** (0.0186)
GDP per Capita		-0.1026** (0.0401)	-.0973*** (0.0343)	-0.1033** (0.0513)
Openness			-0.0353 (0.5399)	0.2243 (0.6471)
Exchange Rate				-0.0554 (0. .0787)
Cons	1.2483*** (0.4377)	1.3739*** (0.4166)	1.4687** (0.5678)	0.7000 (0.4202)
$\boldsymbol{ECMt-1}$	-0.2791** (0.1056)	-0.2889*** (0.0968)	-0.3056*** (0.0891)	-0.1745** (0.0698)
Adjusted R-Squared	0.2575	0.5519	.5829	0.7815
Log Likelihood	34.8302	47.4650	48.9329	63.4342
No. of Observations	41	41	41	41
Root MSE	0.1074	0.0834	0.0805	0.0582

The restricted model (P2) has been used to further check the robustness of the model whereby P2 means that lag selection should be greater than 1. The Table 4.4 shows that the results sustain this robustness check and confirm the earlier findings further. As per first restricted model, a one per cent increase in inflation leads to 2.7 per cent decrease in public debt while the other models produce a bit higher coefficients. Openness still remains statistically insignificant and takes a positive sign when modeled with exchange rate.

Table 4.4: ARDL Long Run Model with Log Public Debt as Dependent variable by using Restricted Models

Variables	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**
Inflation (CPI)	- 0.0271** (0.0160)	- 0.0378** (0.0140)	- 0.0340** (0.0149)	- 0.0329 (0.0168)	- 0.0338** (0.0163)	- 0.0387** (0.0151)	-0.0343** (0.0149)
GDP per Capita	-	- 0.0990** (0.0364)	-0.0941 (0.0396)	- 0.0859** (0.0419)	- 0.0562 (0.0673)	- 0.1088** (0.0389)	- 0.1185** (0.0473)
Openness	-	-	0.0788 (0. 6434)	0.2091 (0.6488)	0.0528 (0.7102)	0.5762 (0.6086)	0.5574 (0.5819)
FDI	-	-	-	-0.0663 (0.0662)	-	-	-
GCF	-	-	-	-	- 0.0150 (0.0222)	-	-
ODA	-	-	-	-	-	0.0522 (0.0422)	-
Exch. Rate	-	-	-	-	-	-	- 0.0635 (0.0665)
Cons	1.4287*** (0.5005)	1.5776*** (0.4560)	1.3035** (0.6123)	1.2402** (0.6437)	1.2772** (0.6493)	0.8742 (0.6914)	0.6661 (0.4737)
$\boldsymbol{ECMt-1}$	- 0.3213** (0.1189)	-0.3322*** (0.1043)	- 0.2947** (0.1179)	- 0.3106** (01450)	- 0.2845** (0.1315)	- 0.3344** (0.1281)	- 0.2301** (0.0892)
Adjusted R-Squared	0.2249	0.5446	0.5761	52.7083	0.5374	0.5657	0.7644
Log Likelihood	35.6363	48.3737	51.8635	52.7083	52.3124	53.6052	66.1484
No. of Observations	41	41	41	41	41	41	41
Root MSE	0.1098	0.0841	0.0812	0.0840	0.0848	0.0821	0.0605

Therefore, results confirm that inflation along with GDP growth is a major determinant of public debt of Pakistan while openness of the economy does not have any significant impact on public debt accumulation in Pakistan.

4.4 Short Term Dynamics through Error Correction Mechanism (ECM)

In the ARDL model of cointegration, Error Correction Mechanism (ECM) is put into use to measure the short run effects. In this regard, the term ECM_{t-1} shows the speed of adjustment from short run disequilibria to long term equilibria while the negative sign denotes that disequilibria will adjust and converge towards the long term equilibrium position (Jalil, Tariq and Bibi, 2013). In all the three criteria used for estimation of the models, the term ECM_{t-1} is significant at 1% except the first model which is significant at 5%. Its magnitude shows a convergence period of around 3 to 4 years. For instance, in the first model of the SBC criteria, the magnitude of coefficient - 0.2791 shows that less than four years are required to come out of the short run shock and converge back to the original position.

4.5 Sub Sample Test Results

This study tried to answer an important question as to what is the impact of nature of political regimes on the public debt in Pakistan. For the purpose, a sub sample analysis has been used in the model. Table 4.5 contains the results for democratic regimes while Tables 4.6 presents the results for autocratic regimes. Interestingly, sub-sample analysis depicts two contrasting dynamics. As per the study, inflation appears highly significant for democratic regimes while insignificant for autocratic regimes. On the other hand, economic growth appears as a significant factor in the case of autocratic regimes while it becomes insignificant under democratic regime.

Table 4.5: ARDL Long Run Model with Log Public Debt as Dependent variable **(Democratic Regimes)**

Variables	**Model 1 (SBC)**	**Model 2 (AIC)**	**Model 3 (P2)**
INF	-0.0390*** (0.0110)	-0.0390*** (0.0110)	-0.0356*** (0.0104)
GDPC	- 0.0198 (0.0246)	- 0.0198 (0.0246)	0.0204 (0.0354)
Cons	3.1268*** (0.7632)	3.2914*** (0.8591)	3.2914*** (0.8591)
$\boldsymbol{ECMt-1}$	- 0.6609 (0.1781)	- 0.6609*** (0.1781)	-0.7091*** (0.2003)
Adjusted R-Squared	0.7201	0.7201	0.7172
Log Likelihood	25.9289	25.9289	28.1603

No. of Observations	21	21	21
Root MSE	0.0832	0.0832	0.0837

The study thus explains that in democratic (political) regimes inflation reduces burden of public debt as inflation reduces the impact of higher interest rates and also through devaluation. Another explanation may be that higher interest rates discourage debt accumulation. Contrary to it, since autocratic regimes are un-accountable to the constituents for re-election, their decisions for debt do not depend upon cost of borrowing which remains in tandem with inflation.

During democratic periods, insignificant impact of economic growth on debt may be interpreted as in case of Pakistan, due to multiparty political party system and continuous disruption in the political process, the democratic regimes remained fragile (Arshad, 2014). The fragility and insecurity of the democratic regime prompts the government for higher spending, mostly financed through debt, irrespective of economic growth. However, in autocratic regimes, growth appears to be a major determinant, showing a restraining impact upon the public debt.

Table 4.6: ARDL Lon Run Model with Log Public Debt as Dependent variable **(Autocratic Regimes)**

Variables	**Model 1 (SBC)**	**Model 2 (AIC)**	**Model 3 (P2)**
INF	- 0.0180 (0.0148)	- 0.0131 (0.0130)	- 0.0382** (.02077)
GDPC	- 0.0932** (0.0513)	-0.0775** (0.0402)	-0.0454 (0.0390)
Cons	1.1484 (0.4948)	1.2935** (0.4941)	2.0777** (1.0869)
$\boldsymbol{ECMt-1}$	- 0.2535** (0.1159)	- 0.2908** (0.1163)	-0.4600** (0.2421)
Adjusted R-Squared	0.3430	0.3756	0.2252
Log Likelihood	28.3004	29.4543	30.3978
No. of Observations	20	20	20
Root MSE	0.0657	0.0640	0.0713

Alternatively, history has witnessed that Pakistan's economy has remained a roller coaster economy wherein there is a strong trend, showing the healthy economic outlook during autocratic regimes while during the democratic periods, its economic credentials have remained

not satisfactory. A major factor may be that after the departure of military regimes, public finance/budgetary has remained a tough situation for the democratic dispensations and thereby not growth but high inflation is the factor which reduces the public debt during democratic periods.

CHAPTER V CONCLUSION

This study has been undertaken to analyze the determinants of public debt in Pakistan, with a particular focus on the analysis of impact of inflation, economic growth and openness of the economy. The study also analyzed the determinants of debt separately during democratic and autocratic regimes. The results showed a significant negative impact of inflation and economic growth on the public debt of Pakistan while openness does not appear to have any long term effect on the debt dynamics of Pakistan. On the other hand, the findings from sub-sample analysis indicate that inflation is the major determining factor during democratic while growth has the diminishing impact on the public debt during autocratic regimes.

It becomes apparent that inflation is a potent factor, having a declining effect on the public debt otherwise debt ratio may aggravate. The primary reason for inflation as a determining factor is that since 1980s the public debt has increased in Pakistan with a marked increase in domestic debt in the past decade. Therefore, the conclusion sustains the theoretical aphorism that inflation reduces the impact of domestic debt. However, at the same time it has to be kept in mind that although resort to inflation for reducing the impact of higher interest rate may be strong temptation for governments, it has extreme negative repercussions for the economy. For instance, as the interest rates remain high due to higher inflation, investment and growth remain low while the inflationary pressures keep the expectations for inflation high; thus making a complete vicious circle. The economy of Pakistan has remained witness to this tragedy of errors in past. Therefore, it is recommended that monetary and fiscal policies do care about the fact that inflation, has a restraining power on the debt but it distorts the macroeconomic framework.

The study has also come up with the findings that economic growth has a strong negative impact on the public debt of Pakistan. This clearly shows that healthy economic growth will

lower the burden of public debt for the country by increasing the fiscal space as well as improving the macroeconomic fundamentals. If public debt is used for investment purposes, it has the capacity to reduce the debt in the long run as the country is undergoing a demographic transition with a visible youth bulge, thus addressing the intergenerational equity problem of debt also. Further, the impact of growth in reducing the public debt during autocratic regimes substantiates this dictum that as the military regimes tend to have a consolidated and some somewhat sustained economic policies, higher economic growth exerts a negative influence on the public debt.

Openness of the economy does not have a determining influence on the public debt of Pakistan. As stated earlier, this has to do with the fact that Pakistan is a net importer while export growth has remained stagnant over a long period of time. Therefore, Pakistan economy may not expect much gains from openness in order to reduce the public debt. But, at the same time a judicious use of ODA for enhancing export competitiveness may have strong restraining impact upon the public debt of Pakistan. Although, in the present study, ODA used as a control variable has not shown a significant direct impact on the public debt of Pakistan but using the ODA for enhancing the export competitiveness is a question left for further study.

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